

C/M WHAT IS CLAIMED IS:

1. A radar gauge adapted to sense fluid level in a tank, comprising:

a radar gauge circuit adapted to receive a transmit frequency and a sample frequency controlling radar transmission and level sampling respectively, the radar gauge circuit generating a level output;

a clock source generating first and second clock frequencies and having a control input setting a first frequency separation between the first and second clock frequencies;

a separation sensing circuit coupled to the clock source and generating an evaluation output as a function of the first frequency separation; and

a controller receiving the evaluation output, the controller having a timer that measures the frequency separation and a control output feeding back to the control input that stabilizes the first separation as a function of timing the evaluation outputs; the controller further having a correction circuit that corrects the level output as a function of the first frequency separation.

2. The radar gauge of Claim 1, further comprising:

a divider circuit dividing the first and second clock frequencies and generating the transmit and the sample frequencies wherein the transmit and sample frequencies are separated from each other by a second

frequency separation; and
the separation sensing circuit further coupling
to the divider circuit and generating a
second evaluation output coupling to the
controller as a function of the second
frequency separation.

3. The radar gauge of Claim 2 wherein the separation
sensing circuit further comprises:

a circuit sensing a polarity of the sample clock
and generating a further evaluation output
representative of the polarity.

4. The radar gauge of Claim 1 wherein the clock
source comprises a voltage controlled oscillator
controlled by the control output and generating the
second clock frequency.

5. The radar gauge of Claim 4 wherein the controller
comprises a digital-to-analog converter generating the
control output.

6. The radar gauge of Claim 1 wherein the controller
includes a timer measuring time intervals of an
evaluation output.

7. The radar gauge of Claim 6 wherein the level
output includes a current calculated distance that is
a function of a current timer measurement.

8. The radar gauge of Claim 1 wherein the controller
includes a timer performing a timer measurement of a
count an evaluation output during a time interval.

8. The radar gauge of Claim ¹~~8~~ wherein the level output includes a current calculated distance that is a function of a current timer measurement.

⁹~~10~~. The radar gauge of Claim 1 wherein the radar gauge circuit includes a transmit pulse generator and a sample pulse generator controlled respectively by the transmit clock and the sample clock.

¹⁰~~11~~. The radar gauge of Claim 1 wherein the radar gauge is energized solely by a 4-20 mA analog current and includes a voltage regulator energized by the 4-20 mA analog current.

12. A method of stabilizing clock generation in a radar gauge adapted to sense fluid level in a tank, comprising:

generating first and second clock frequencies separated from each other by a first frequency separation controlled by a control input;

generating a first evaluation output as a function of the first frequency separation;

generating a control output feeding back to the control input that stabilizes the first separation as a function of the evaluation output; and

generating a level output as a function of the stabilized first frequency separation, the level output corrected as a function of the first frequency separation .

13. The method of Claim 12, further comprising:
dividing the first and second clock frequencies
to generate the transmit and sample
frequencies separated from each other by a
second frequency separation; and
generating a second evaluation output as a
function of the second frequency separation;
and
generating the control output as a further
function of the second evaluation output
and
correcting the level output as a function of the
second evaluation output.

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14. The method of Claim 12 further comprising:
sensing a polarity of the sample clock and
generating a further evaluation output
representative of the polarity.

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15. The method of Claim 12 further comprising:
generating the second clock frequency in a
voltage controlled oscillator wherein an
oscillator control voltage is controlled by
the control output.

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16. The method of Claim 13 further comprising:
generating the oscillator control voltage in a
digital-to-analog converter.

17. A computer-readable medium having stored thereon
a plurality of sequences of instructions for execution
by a processor in a radar gauge adapted to sense fluid
level in a tank, the radar gauge adapted to transmit

and receive radar transmissions, the plurality of sequences of instructions including sequences, when executed, that cause the processor to perform the sequence:

receiving a first evaluation output representing a first frequency difference between first and second clock frequencies generated by a clock source having a control input;

receiving a second evaluation output representing a second frequency difference between transmit and sample frequencies generated by dividing the first and second frequencies respectively; and

generating a control output feeding back to the control input that stabilizes the first separation as a function of the first and second evaluation outputs.

18. The computer readable medium of Claim 17 wherein the sequence of instructions further comprises:

sensing a polarity of the sample clock and generating a further evaluation output representative of the polarity.

19. A radar gauge adapted to sense fluid level in a tank, comprising:

means for receiving a transmit frequency and a sample frequency controlling radar transmission and level sampling respectively, and for generating a level output;

means for generating first and second clock frequencies separated from each other by a

first frequency separation, the clock source having a control input setting the first separation;

means for dividing the first and second clock frequencies and for generating the transmit and sample clock frequencies separated from each other by a second frequency separation;

means for sensing the first and second frequency separations and generating evaluation outputs as functions of the first and second frequency separations; and

means for controlling a control output feeding back to the control input, stabilizing the first separation as a function of the evaluation outputs.

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~~20~~. The radar gauge of Claim ¹⁵~~18~~, further comprising:
- means for sensing a polarity of the sample clock and generating a further evaluation output representative of the polarity.